

BLM LIBRARY



88068337



**US Forest Service, Salmon-Challis National Forest
Draft Record of Decision**

**Final Environmental Impact Statement for the
Thompson Creek Mine Expansion, Custer County, Idaho**

HD
243
.I2
T46
2015b
c.2

**NEPA Serial Number: DOI-BLM-ID-I030-2011-0001-EIS
March 2015**

The U.S. Department of Agriculture (USDA) prohibits discrimination against its customers, employees, and applicants for employment on the bases of race, color, national origin, age, disability, sex, gender identity, religion, reprisal, and where applicable, political beliefs, marital status, familial or parental status, sexual orientation, or all or part of an individual's income is derived from any public assistance program, or protected genetic information in employment or in any program or activity conducted or funded by the Department. (Not all prohibited bases will apply to all programs and/or employment activities.)

To File an Employment Complaint:

If you wish to file an employment complaint, you must contact your agency's EEO Counselor (PDF) within 45 days of the date of the alleged discriminatory act, event, or in the case of a personnel action. Additional information can be found online at http://www.ascr.usda.gov/complaint_filing_file.html.

To File a Program Complaint:

If you wish to file a Civil Rights program complaint of discrimination, complete the USDA Program Discrimination Complaint Form (PDF), found online at http://www.ascr.usda.gov/complaint_filing_cust.html, or at any USDA office, or call (866) 632-9992 to request the form. You may also write a letter containing all of the information requested in the form. Send your completed complaint form or letter to us by mail at U.S. Department of Agriculture, Director, Office of Adjudication, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410, by fax (202) 690-7442 or email at program.intake@usda.gov.

Persons with Disabilities:

Individuals who are deaf, hard of hearing or have speech disabilities and who wish to file either an EEO or program complaint, please contact USDA through the Federal Relay Service at (800) 877-8339 or (800) 845-6136 (in Spanish). Persons with disabilities who wish to file a program complaint, please see information above on how to contact us by mail directly or by email. If you require alternative means of communication for program information (e.g., Braille, large print, audiotape, etc.) please contact USDA's TARGET Center at (202) 720-2600 (voice and TDD).

#905985750

10 88068837

HD
243
.I2
T46
2015b
C.2

**US Forest Service, Salmon-Challis National Forest, Idaho
Draft Record of Decision
Final Environmental Impact Statement for the Thompson Creek Mine
Expansion, Custer County, Idaho.**

Cooperating Agency/
Responsible Official:

US Department of Agriculture, US Forest Service
Salmon-Challis National Forest
Forest Supervisor
1206 South Challis Street
Salmon, ID 83467

Lead Agency:

US Department of the Interior, Bureau of Land Management
Idaho Falls District,
Challis Field Office

Other Cooperating Agencies:

US Army Corps of Engineers
US Environmental Protection Agency
Idaho Department of Lands
Idaho Department of Environmental Quality

BLM Library
Bldg. 50
Denver Federal Center
P.O. Box 25047
Denver, Colorado 80225

Abstract: This draft record of decision documents the US Forest Service proposed decision to authorize a modified mining plan of operations (MMPO) for the Thompson Creek molybdenum mine on National Forest System (NFS) land. A final environmental impact statement was prepared by the Bureau of Land Management (lead agency), US Forest Service/Salmon-Challis National Forest, and other cooperating agencies that describes the environmental effects of two proposals by Thompson Creek Mining Company: 1) the MMPO for expansion of the Thompson Creek mine near Clayton in Custer County, Idaho; and 2) an exchange of Federal (BLM-administered) land at the mine for private lands owned by the company in Custer and Bannock counties, Idaho. The US Forest Service only has authority regarding the effects of the MMPO on NFS land. The final environmental impact statement describes the environmental effects of Alternative M1 - the no action alternative; Alternative M2 - the MMPO as proposed by Thompson Creek Mining Company; and Alternative M3 - the No Name waste rock facility (a modification to Alternative M2). The US Forest Service has selected Alternative M2 as its agency-preferred alternative, which will authorize additional mining disturbance on 185.5 acres of NFS land.

RECEIVED
JUL 20 1994
BUREAU OF LAND MANAGEMENT
SANDWICH BOX 25047
DENVER, COLORADO 80225

TABLE OF CONTENTS

Part 1. INTRODUCTION	1
1.1. About This Document.....	1
1.2. Purpose and Need for Action.....	1
1.3. Background Information.....	2
1.4. Proposed MMPO	3
Part 2. DECISION.....	4
2.1. Decision Authority.....	4
2.2. Forest Service Decision	5
2.3. Rationale for the Decision	5
2.4. Exposure to Risk.....	6
Part 3. ALTERNATIVES CONSIDERED	7
3.1. Alternatives Considered in Detail.....	7
3.1.1. Alternative M1 – No Action	7
3.1.2. Alternative M2 – MMPO as Submitted by TCMC.....	7
3.1.3. Alternative M3 – No Name Waste Rock Storage Facility.....	10
3.1.4. Reclamation (Common to All Alternatives).....	10
3.1.5. Environmentally Preferable Alternative	16
3.1.6. Comparison of Alternatives	16
3.2. Alternatives Considered but Eliminated From Further Analysis.....	16
Part 4. ENVIRONMENTAL CONTROLS, MONITORING, AND MITIGATION	17
4.1. Geologic Resources and Geotechnical Issues.....	17
4.2. Vegetation, Forest Resources, and Invasive and Non-native Plants.....	18
4.3. Water Resources	18
4.4. Wetlands, Floodplains, and Riparian Areas.....	18
4.5. Cultural and Paleontological Resources	18
Part 5. PUBLIC INVOLVEMENT	19
5.1. Scoping	19
5.2. Distribution of the Draft Environmental Impact Statement.....	19
Part 6. LEGALLY-REQUIRED FINDINGS	19
6.1. The National Environmental Policy Act of 1969	19
6.2. The Organic Administration Act of 1897, Multiple-Use Sustained-Yield Act of 1960, Forest and Rangeland Renewable Resources Planning Act of 1974, and National Forest Management Act of 1976.....	20
6.3. Federal Mining Laws	20
6.4. The Endangered Species Act of 1973.....	20
6.5. The Migratory Bird Treaty Act of 1918, Bald and Golden Eagle Protection Act of 1940	21
6.6. The Clean Water Act of 1972	21
6.7. The Clean Air Act of 1970	21
6.8. Secretarial Order No. 3226 Amendment No. 1	21
6.9. The Federal Noxious Weed Act of 1974	22
6.10. Idaho Roadless Rule of 2008	22
6.11. The Archaeological Resource Protection Act of 1979, National Historic Preservation Act of 1966.....	22
6.12. Paleontological Resources Preservation Act of 2009	22

6.13. Federal Agency Responsibilities to Federally-Recognized Tribes.....	22
6.14. Idaho Water Quality Standards and Groundwater Quality Rule	23
6.15. Environmental Justice.....	23
Part 7. PRE-DECISIONAL ADMINISTRATIVE REVIEW	23

LIST OF FIGURES

Figure 1.3-1. Project area, MMPO.....	3
Figure 3.1-1. MMPO Alternative M2 – MMPO as submitted by TCMC	8

LIST OF TABLES

Table 3.1-1. Additional disturbance, Alternative M2.....	10
Table 3.1-2. Post-reclamation monitoring, Alternative M2.....	16

ACRONYMS

BA	biological assessment
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
BMP	best management practice
cfs	cubic feet per second
CAA	Clean Air Act
CWA	Clean Water Act
DEIS	draft environmental impact statement
EIS	environmental impact statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FEIS	final environmental impact statement
FSEIS	final supplemental environmental impact statement
IDEQ	Idaho Department of Environmental Quality
IDL	Idaho Department of Lands
IDWR	Idaho Department of Water Resources
LRMP	Land and Resource Management Plan
MA	management area
MBTA	Migratory Bird Treaty Act
MMPO	modified mining plan of operations
MPO	mining plan of operations
NEPA	National Environmental Policy Act
NFS	National Forest System
NMFS	National Marine Fisheries Service
NOI	notice of intent
NPDES	National Pollutant Discharge Elimination System
NRHP	National Register of Historic Places
ROD	record of decision
SCNF	Salmon-Challis National Forest
SHPO	State Historic Preservation Office
TCMC	Thompson Creek Mining Company
TSF	tailings storage facility
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
WRSF	waste rock storage facility
WQS	water quality standard
WUS	waters of the US

This page intentionally left blank.

PART 1. INTRODUCTION

1.1. About This Document

The Bureau of Land Management (BLM) (lead agency), Salmon-Challis National Forest (SCNF or Forest Service), and US Army Corps of Engineers (USACE), in cooperation with the US Environmental Protection Agency (EPA), Idaho Department of Environmental Quality (IDEQ), and Idaho Department of Lands (IDL), prepared an environmental impact statement (EIS) to review the potential environmental effects of a modified mining plan of operations (MMPO) proposed by the Thompson Creek Mining Company (TCMC) that would expand the area and extend the life of the Thompson Creek molybdenum mine (the project). The EIS also evaluated a land exchange proposed by the TCMC. The land exchange would involve private land owned by the TCMC and BLM-administered land; therefore, the Forest Service has no authority over this land transaction.

In addition to the proposed MMPO, one mining action alternative was considered along with the no action alternative. The final environmental impact statement (FEIS) (BLM 2015) was released to the public on March 27, 2015. The Forest Service has authority over only the portions of the project that would occur on National Forest System (NFS) land. This draft Forest Service record of decision (ROD) is specific to the portions of the project on NFS land and presumes the BLM will select an action alternative, most likely the preferred mine-plan alternative identified in the FEIS, as opposed to the no action alternative. Should the BLM decide on a course of action that alters the proposed MMPO on NFS land, the final Forest Service ROD will be revised accordingly.

This draft ROD is organized into seven parts:

Part 1 – Introduction

Part 2 – Decision

Part 3 – Alternatives Considered

Part 4 – Environmental Controls, Monitoring, and Mitigation

Part 5 – Public Involvement

Part 6 – Legally-required Findings

Part 7 – Pre-decisional Administrative Review

1.2. Purpose and Need for Action

The purpose of the Forest Service action on the MMPO is to respond to the proposal for a mine expansion on NFS land and the subsequent extension of mine life. The Forest Service must determine if changes, including additions, or conditions to the MMPO are necessary prior to approval of the MMPO to meet the requirements of the Forest Service regulations (36 CFR 228A), within the context of TCMC's statutory rights under Federal mining laws. The need for the Forest Service action is related to the agencies' responsibilities under applicable Federal laws and regulations to consider and respond to the MMPO.

1.3. Background Information

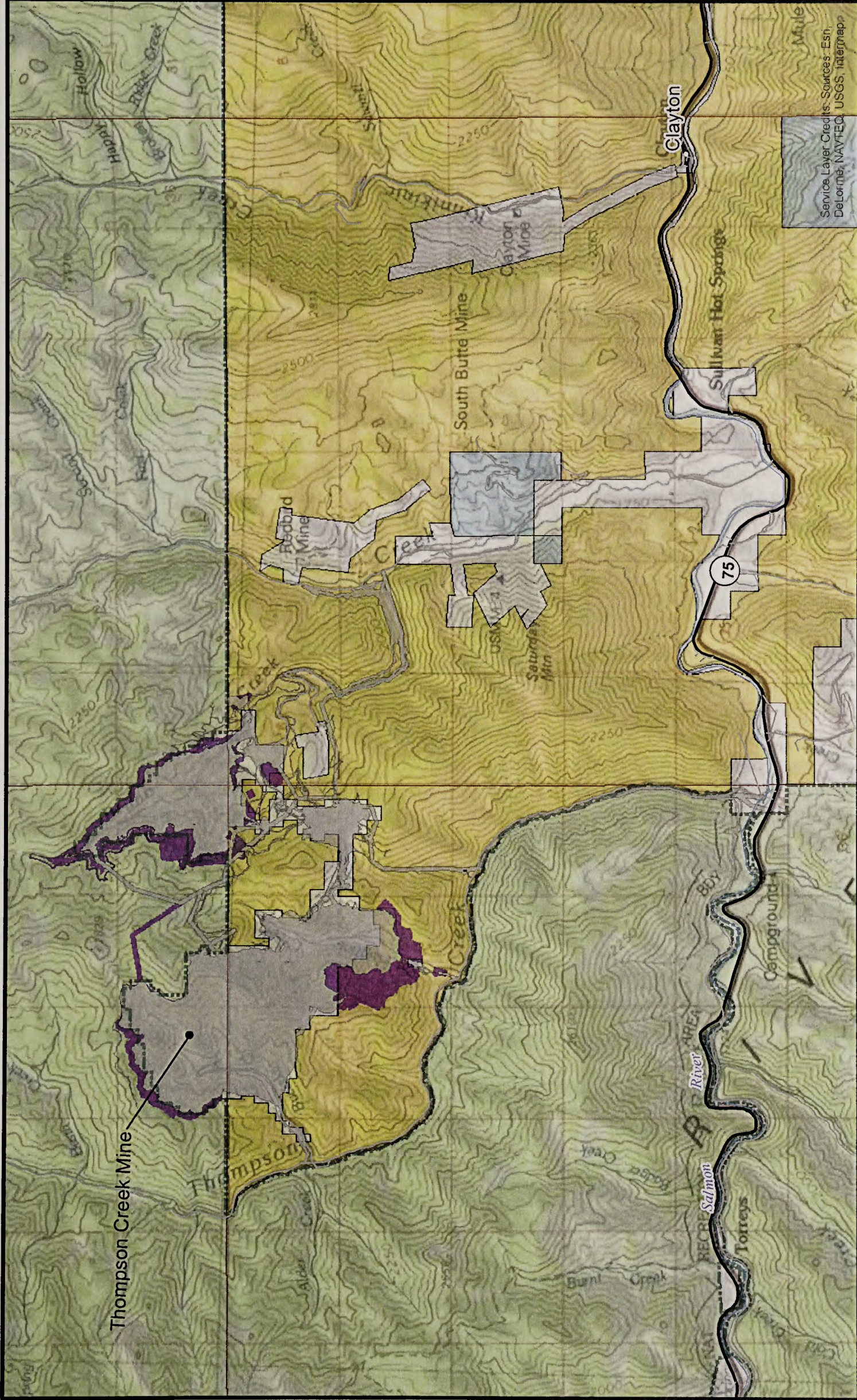
There is a single current mining plan of operations (MPO) and a single proposed MMPO for the mine. The currently-approved MPO includes all modifications approved since its original submission in 1979. In addition to mine operations and reclamation the approved MPO includes a variety of plans such as the interim management plan, water quality monitoring plan, water management plan, fugitive dust control plan, etc.

The mine is seven air miles northwest of Clayton and 21 air miles southwest of Challis in Custer County, Idaho (Figure 1.3-1). The mine has been owned by a series of public and private companies since 1979. The mine is currently owned and operated by Cyprus Thompson Creek Mining Company, a wholly owned subsidiary of TCMC, which is a wholly owned subsidiary of Thompson Creek Metals Company Inc., a public company headquartered in Denver, Colorado.

Cyprus Minerals Corporation, through its exploration subsidiary Tuscarora Mining Company, staked the first mining claims on the Thompson Creek ore deposit in 1967. Exploration work began in earnest (e.g., diamond core drilling) in 1968 and continued throughout the 1970s. During this time VTN Colorado, Inc. (VTN 1975) completed the first of three substantial environmental analysis documents for the mine – an EIS to provide baseline environmental information and evaluate mitigation measures for the anticipated effects of the mine.

Cyprus Minerals Corporation submitted a Notice of Intent to Operate and a MPO to the Forest Service and BLM in 1979 (Cyprus Mines Corporation 1979). In 1980 the Forest Service (lead agency) and the BLM (cooperating agency) completed a FEIS analyzing the effects of approving the MPO or alternatives (USFS 1980). The Challis National Forest Supervisor and the BLM Challis Field Office Manager selected Alternative 1 (the proposed action), which was consistent with the applicable Challis National Forest and BLM land use plans. Construction of the mine began in January 1981, and commercial molybdenum concentrate production began in November 1983 and continues to date. The mine completed Phase 7 mining operations in December 2014, which corresponds to the final design limits of the approved MPO.

In 1999 the Forest Service (lead agency) and BLM (cooperating agency) completed a final supplemental EIS (FSEIS) evaluating a supplemental MPO submitted by TCMC. The supplemental plan describes modifications to the waste rock storage facilities (WRSFs) and tailings storage facility (TSF) to minimize the potential for acid rock drainage from these facilities. The 1999 FSEIS included an analysis of no action (Alternative 1), the proposed action (Alternative 2), and two additional action alternatives (Alternative 3 and Alternative 4) (USFS 1999a). Alternative 2 included modifications to the WRSFs and TSF. The Forest Service and BLM selected Alternative 2 and gave interim approval of the MPO consistent with RODs dated March 1999 (USFS 1999b) and January 2000 (USFS 2000). Additional Federal approval was not made due to the issuance of mineral patents in September 2000, when the mine operations that were the subject of the SEIS became private property under State (IDL) jurisdiction.

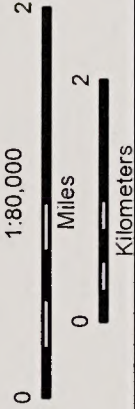
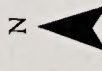


Legend

- Existing Mining Disturbance
- MMPO Disturbance

Land Ownership

- BLM
- Private
- State
- Forest Service



No warranty is made by the US Forest Service (USFS) for the use of this data for purposes not intended by the USFS.

Selected land, existing mining disturbance from Thompson Creek Mine data, polygons created by Ken Gardner. Ownership data is at 1:24,000 and created and maintained by the Bureau of Land Management, Idaho State Office, Geographic Sciences. Topographic background from USGS 7.5' Quadrangles 1:24,000 scale. Coordinate system UTM Zone 11 NAD 83

Service Layer Credits: Esri, DeLorme, NAVTEQ, USGS, Intermap,

Figure 1.3-1
Project area, MMPO
Thompson Creek Mine EIS



Proposed MMPO

As of September 2014, the cumulative surface disturbance of the mine was 2,191 acres on private land, 451 acres on land administered by the BLM Challis Field Office, and 181 acres on NFS land. The current operations consist of an open pit, two cross-valley-fill WRSFs in the Pat Hughes and Buckskin drainages, a TSF in the Bruno drainage, a mill, and a network of roads, pipelines, power lines, conveyor belts, sedimentation ponds, etc.

Under the current MPO (amended), which describes operations through Phase 7, the mine ceased production in late 2014 and is currently in care and maintenance. The proposed MMPO describes Phase 8 expansion of the open pit, expansion of the WRSFs and TSF, and modifications to the existing long-term water management plan (Section 3.1.2). The MMPO will allow TCMC to produce molybdenum until approximately 2025 at a rate of approximately 30,000 short tons per day of ore (15-20 million pounds/year of molybdenum), and TCMC will employ up to 400 full-time employees. The additional surface disturbance at the mine from the MMPO will be approximately 110 acres of private land owned by TCMC (where operations are administered by the State of Idaho), 200 acres of BLM land, and 185 acres of NFS land. In addition to incremental expansion of the Buckskin WRSF and TSF, disturbance on NFS land will include a portion of a 24.9 kilovolt power line, which will be relocated due to expansion of the open pit.

TCMC mines molybdenum on private and Federal land open to mineral entry pursuant to Federal mining laws. These laws confer a statutory right to conduct operations that are reasonably incident to exploration and development of locatable mineral deposits, in compliance with other applicable laws and regulations. TCMC submitted the MMPO describing the operations necessary to continue to develop the mine in a reasonable (economical, technologically feasible, and safe) manner. The operations would permit TCMC to continue to supply national and worldwide demand for molybdenum. TCMC has submitted a 404 permit application to the USACE to obtain authorization to discharge dredged or fill materials into waters of the US (WUS). Such discharge will be necessary for TCMC to implement the MMPO.

PART 2. DECISION

2.1. Decision Authority

The BLM is the lead agency for this project and must issue decisions regarding the MMPO on BLM-administered land and regarding the land exchange. However, the Forest Service and USACE must also issue separate decisions for the portions of the project over which they have distinct, but interrelated, regulatory authority. The Forest Service must decide whether, and under what reasonable conditions, to approve an MMPO on NFS land. The USACE must issue a decision related to the 404 permit application.

There is a 30-day review period that began when the FEIS was released on March 27, 2015. The Forest Service has released the draft ROD for administrative review contemporaneously with the FEIS. Subsequent to the 30-day FEIS review period, the responsible officials from the BLM and USACE will each prepare a ROD for the components of the project for which their deciding officials have respective authority, and for which there are distinct review processes

(FEIS Sections 1.6.1 through 1.6.3). Part 7 describes the Forest Service pre-decisional administrative review process.

I am the responsible Forest Service official for the portion of the project under Forest Service authority - Charles Mark, Forest Supervisor for the SCNF. In making my decision, I have relied on a wide variety of information, including scoping input, the FEIS, recommendations from other agencies, applicable laws, and regulations and policies. The BLM and Forest Service have jointly released the FEIS to all parties on the mailing list. The Forest Service has also issued this draft ROD in conjunction with the release of the FEIS. Once the other agencies' RODs and the final Forest Service ROD are issued for the MMPO, TCMC will submit a MMPO that conforms to the selected alternative. The BLM, Forest Service, and IDL will administratively review and, when appropriate, approve the "ROD" MMPO. The "ROD" MMPO will include the detail necessary for the agencies to administer the mine, e.g., engineering diagrams at appropriate site-level scales.

2.2. Forest Service Decision

This ROD documents my decision to conditionally authorize the MMPO on NFS land with no modifications (Alternative M2 – MMPO as submitted by TCMC [Section 3.1.2]). These conditions include TCMC providing the "ROD" MMPO for Forest Service approval, adequate financial assurance for reclamation and perpetual water management, and continued interagency cooperation in the estimation of costs and acceptance of updates for perpetual financial assurances of such.

2.3. Rationale for the Decision

While the effects of the action alternatives are very similar (FEIS Chapter 4), the selected alternative best meets the purpose of and need for action while containing disturbance related to the Thompson Creek Mine to drainages that are already impacted by mining operations. The selected alternative will allow TCMC to continue to develop the mine in a reasonable (economical, technologically feasible, and safe) manner while complying with environmental protection and other applicable laws and surface use regulations. My decision is based on review of the project record, which shows a thorough examination of relevant and best available scientific information, consideration of public comment, and the acknowledgment of incomplete or unavailable information, scientific uncertainty, and risk (Section 2.4).

I have taken into consideration the degree to which the environmental controls, monitoring, and mitigation measures (Part 4) will reasonably reduce potential effects to the environment, and the predicted effects of the MMPO alternatives on groundwater and surface water quality in the analysis area in comparison to water quality standards (WQSs). All practicable means to minimize adverse environmental effects on National Forest surface resources, while allowing for continued mining operations, are either already incorporated into the existing MPO or would be enhanced by the selected alternative.

The requirements of the 1987 Land and Resource Management Plan (LRMP) were considered as I formulated my decision (Section 6.2). The actions that would occur on NFS land under the MMPO will be in compliance with the LRMP, which in addition to standards and guidelines for

multiple surface resources, provides for minerals activities and future mineral development on the NFS land involved in the MMPO.

2.4. Exposure to Risk

Alternative M2 relies on engineered systems to contain the waste rock and tailings, and to manage the water that contacts the mine in perpetuity. In particular, post-reclamation water management (Lorax 2012a) would be required to assure that water leaving the mine would meet the current and applicable WQs. The water management system consists of a series of collection points, pipelines, pump stations, and treatment plants. Although operation of the water management system, in compliance with all applicable WQs, has been shown in the FEIS to be reasonably foreseeable, these facilities, during operations of 100s of years or more, could be subject to equipment failures (e.g., pipeline rupture), human error (e.g., a valve improperly opened), or extended power outages (e.g., damages to the regional electricity grid). Further, the Forest Service engineers do not disagree with the TCMC design engineers assessment that the waste rock and tailings storage facilities would continue to be stable and would safely withstand the maximum credible earthquake under all of the MMPO alternatives (FEIS Section 4.2.1). Therefore, it is not possible to predict how water management problems would occur or what the consequences would be, as such would depend on what water was released, where and how much water was released, and the duration and timing of the release.

However, in the worst case, the release of untreated water could cause exceedances of acute WQs in sections of the Salmon River, Thompson Creek, Squaw¹ Creek, and Bruno Creek. There would be no material difference in such risk (probability and consequence) between Alternative M1 and Alternative M2 for which water with similar chemistry would be treated by essentially the same facilities. In the case of Alternative M3, the risk would be slightly greater due to the addition of a new source of water to be treated (a new WRSF) and the additional water collection and transport facilities to connect the new source to the main facilities. However, the primary effect would be to Thompson Creek, which could also be affected by the release of untreated water under Alternative M1 or Alternative M2. The adaptive groundwater management plan (Lorax 2012b), in addition to monitoring, maintenance, and repair of water management facilities, offers three mitigation contingencies in the event that “specified Performance Metrics” are exceeded. These include a slurry wall, a permeable reactive barrier, and additional pumping wells within the vicinity of the existing pump-back system. While none of these contingencies, and very little long-term water management infrastructure of any kind, would be located on NFS lands, a condition of Forest Service approval of the MMPO is continued interagency cooperation in the estimation of costs and acceptance of updates for perpetual financial assurances of such (Section 2.2).

¹ *Squaw Creek* is an official place name in Custer County, and appears in numerous published documents including US Geological Survey topographic maps. The name was established by the US Board of Geographic Names to maintain uniform geographic name usage throughout the Federal Government. However, the word *Squaw* is offensive to some people including the Shoshone-Bannock Tribes. Therefore, *Squaw Creek* is hereafter referred to as *S. Creek*.

PART 3. ALTERNATIVES CONSIDERED

3.1. Alternatives Considered in Detail

The following alternatives, and their effects, were considered in detail in the FEIS.

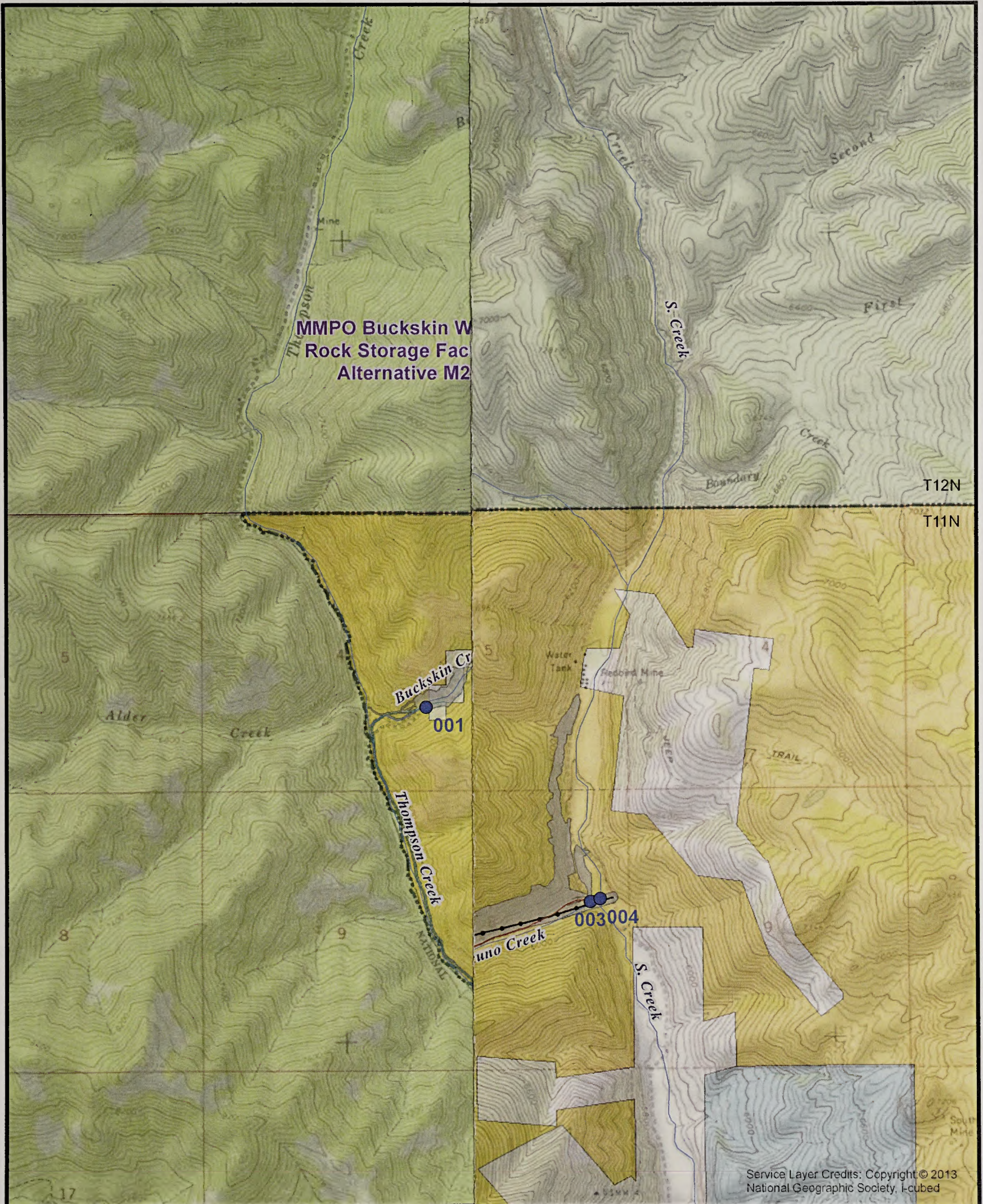
3.1.1. Alternative M1 – No Action

Alternative M1 is TCMC completing mining operations per the approved MPO; i.e., through Phase 7. The approved plan includes the reclamation plan (i.e., the consolidated reclamation plan, as amended) and interim care and maintenance plans. The water management plan is also considered part of Alternative M1 for the EIS, even though such plan has not been explicitly approved by the agencies. That is, the no action alternative does not preclude the Forest Service from administratively accepting a water management plan within the scope of the MPO, approving the associated reclamation costs, or accepting an additional financial guarantee for implementation of the water management plan under Phase 7. Active water treatment is not described in the approved reclamation plan for Alternative M1, but would have to be incorporated into the long term water management plan even if TCMC were to withdraw the proposed MMPO. This is because discharged water must meet all applicable laws and regulations, and active water treatment would be required to continue to do so. Therefore, active water treatment is implicitly required and therefore reasonably foreseeable under the no action alternative.

As of September 2014, the cumulative surface disturbance of the mine was 2,191 acres on private land, 451 acres on land administered by the BLM Challis Field Office, and 181 acres on NFS land. Phase 7 ore production was completed at the end of 2014 with much of the reclamation and post-reclamation monitoring to be completed over a period of 10 to 15 years. The mine is currently in care and maintenance pending approval and initiation of Phase 8 mining operations. The Forest Service continues to cooperate with other Federal and State agencies that have authority to inspect and administer these interim shutdown operations and future reclamation tasks.

3.1.2. Alternative M2 – MMPO as Submitted by TCMC

The MMPO describes Phase 8 mining (Figure 3.1-1). Figure 3.1-1 displays the areas that will be disturbed under the MMPO in relation to Forest Service, BLM, and State (private land) jurisdictional boundaries. NFS lands are denoted in Figure 3.1-1 by a green dashed line and are generally located along the northern margins of the mine site. In general, the mining operations and facilities would be the same under all alternatives, including the no action alternative (Alternative M1).



Legend

- | | |
|-----------------------------|---------------------|
| Existing mining disturbance | Existing power line |
| MMPO areas/Alternative M2 | Pyrite pipeline |
| Existing embankment crest | Tailings pipeline |
| Proposed embankment crest | Water pipeline |
| NPDES outfall | |

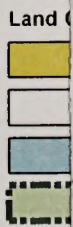


Figure 3.1-1
Alternative M2 - MMPO as submitted by TCMC
Thompson Creek Mine EIS

PART 3. ALTERNATIVES CONSIDERED

3.1. Alternatives Considered in Detail

The following alternatives, and their effects, were considered in detail in the FEIS.

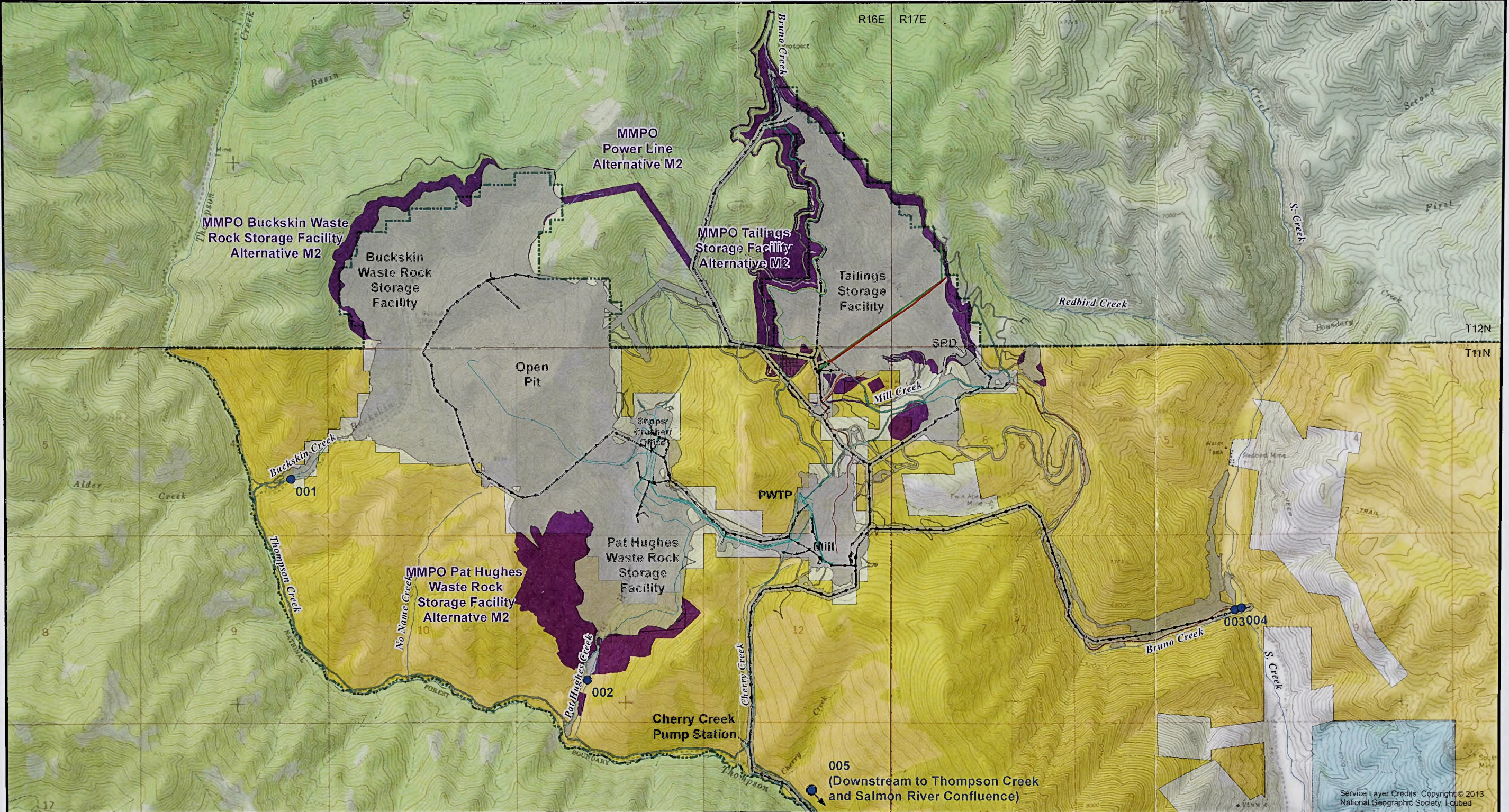
3.1.1. Alternative M1 – No Action

Alternative M1 is TCMC completing mining operations per the approved MPO; i.e., through Phase 7. The approved plan includes the reclamation plan (i.e., the consolidated reclamation plan, as amended) and interim care and maintenance plans. The water management plan is also considered part of Alternative M1 for the EIS, even though such plan has not been explicitly approved by the agencies. That is, the no action alternative does not preclude the Forest Service from administratively accepting a water management plan within the scope of the MPO, approving the associated reclamation costs, or accepting an additional financial guarantee for implementation of the water management plan under Phase 7. Active water treatment is not described in the approved reclamation plan for Alternative M1, but would have to be incorporated into the long term water management plan even if TCMC were to withdraw the proposed MMPO. This is because discharged water must meet all applicable laws and regulations, and active water treatment would be required to continue to do so. Therefore, active water treatment is implicitly required and therefore reasonably foreseeable under the no action alternative.

As of September 2014, the cumulative surface disturbance of the mine was 2,191 acres on private land, 451 acres on land administered by the BLM Challis Field Office, and 181 acres on NFS land. Phase 7 ore production was completed at the end of 2014 with much of the reclamation and post-reclamation monitoring to be completed over a period of 10 to 15 years. The mine is currently in care and maintenance pending approval and initiation of Phase 8 mining operations. The Forest Service continues to cooperate with other Federal and State agencies that have authority to inspect and administer these interim shutdown operations and future reclamation tasks.

3.1.2. Alternative M2 – MMPO as Submitted by TCMC

The MMPO describes Phase 8 mining (Figure 3.1-1). Figure 3.1-1 displays the areas that will be disturbed under the MMPO in relation to Forest Service, BLM, and State (private land) jurisdictional boundaries. NFS lands are denoted in Figure 3.1-1 by a green dashed line and are generally located along the northern margins of the mine site. In general, the mining operations and facilities would be the same under all alternatives, including the no action alternative (Alternative M1).



Legend

Existing mining disturbance	Existing power line	Land Ownership
MMPO areas/Alternative M2	Pyrite pipeline	BLM
Existing embankment crest	Tailings pipeline	Private
Proposed embankment crest	Water pipeline	State
NPDES outfall		Forest Service

N

0 1:32,000 1

0 Miles 1

0 Kilometers 1

No warranty is made by the Bureau of Land Management (BLM) for the use of this data for purposes not intended by the BLM.

Figure 3.1-1
MMPO Alternative M2 - MMPO as submitted by TCMC
Thompson Creek Mine EIS

Selected land, existing mining disturbance from Thompson Creek Mine data, polygons created by Ken Gardner. Ownership data is at 1:24,000 and created and maintained by the Bureau of Land Management, Idaho State Office, Geographic Sciences. Topographic background from USGS 7.5' Quadrangles 1:24,000 scale. Coordinate system UTM Zone 11 NAD 83

Service Layer Credits: Copyright © 2013 National Geographic Society, Inc.



The differences between this alternative (regardless of surface jurisdiction) and Alternative M1 are the following:

- The mine life will be 9 years longer;
- A section of power line will be relocated on NFS land;
- The open pit will be deepened and widened to mine Phase 8 ore;
- The Buckskin and Pat Hughes WRSFs will be expanded and used to store Phase 8 waste rock;
- The TSF embankment will be raised and the TSF impoundment expanded to store the tailings produced from milling Phase 8 ore;
- The long-term water management plan will be modified because of the size and configuration of the Phase 8 facilities and the need for water treatment to ensure WQSs are met; and
- Two additional groundwater cutoff walls will be installed in the Pat Hughes drainage.

Under Alternative M2 there will be additional surface disturbance on 110.0 acres of TCMC land, 200.1 acres of BLM land, and 185.5 acres of NFS land (Table 3.1-1). Of this disturbance, 3.39 acres of wetlands and 10,641 linear feet of stream channel designated as WUS will be subject to a 404 permit from the USACE.

Transportation, Access, and Power

Under Alternative M2 4,900 feet (21.9 acres) of an existing 24.9 kV power line on NFS land (Table 3.1-1) will be relocated on NFS land in the area northeast of the open pit. The relocation will be necessary because of expansion of the open pit. The proposed utility corridor will be on a ridge between Bruno Creek and the head of Pat Hughes Creek, and will extend into the upper reaches of the Buckskin drainage.

Mining operations

Under Alternative M2 molybdenum production will continue to 2025, with most reclamation completed 10 to 15 years later. The mine will produce an additional 131 million pounds of molybdenum as compared to Alternative M1.

Waste rock storage facilities

Under Alternative M2 263.5 million tons of waste rock will be removed and stored in the Buckskin (upper Buckskin) (107.7 million tons) and Pat Hughes (lower Pat Hughes) (155.8 million tons) WRSFs. The expansion of the WRSFs will occur on both private and Federal land, including 54.4 acres of NFS land (Buckskin WRSF only) (Table 3.1-1).

Table 3.1-1. Additional disturbance, Alternative M2.

Facility	TCMC Additional (acres)	TCMC Total (acres)	BLM Addl. (acres)	BLM Total (acres)	Forest Service Addl. (acres)	Forest Service Total (acres)
Buckskin WRSF	8.0	581.4	0.0	1.4	54.4	96.4
Pat Hughes WRSF	19.0	312.1	170.9	252.3	0.0	0.0
Open pit	0.0	491.2	0.0	0.0	0.0	0.0
TSF (estimated)	68.0	531.6	10.5	13.8	52.7	60.3
Operational area – other	12.1	265.6	16.6	139.2	41.7 ¹	42.8
Roads	0.0	38.4	0.0	73.9	0.0	44.3
Power line	0.1	62.6	0.0	138.4	21.9	105.5
Pipeline	2.8	17.3	2.1	31.4	14.8 ²	17.6
Fiber optic cable	0.0	0.3	0.0	0.6	0.0	0.0
TOTAL	110.0	2,300.5	200.1	651.0	185.5	366.9

¹ two reclamation soil borrow areas on west side of TSF

² coincides with existing road disturbance around TSF

Mill and tailings operations

Milling the Phase 8 East and Phase 8 West ore will require additional tailings storage capacity, which will be accomplished by raising and partially re-aligning the TSF embankment crest compared to that at the end of Phase 7. This will increase the capacity of the TSF by 100 to 125 million tons, and will provide adequate space for the tailings produced during Phase 8. The TSF is permitted to store approximately 240 million tons of tailings through the end of Phase 7 (Alternative M1), and will hold a total of approximately 335 million tons at the end of Phase 8 (Alternative M2). The TSF embankment will be raised to provide sufficient storage in the upgradient impoundment. The expansion of the TSF will occur on both private and Federal land, including 52.7 acres of NFS land (Table 3.1-1).

3.1.3. Alternative M3 – No Name Waste Rock Storage Facility

This alternative is similar to Alternative M2, except that the No Name WRSF would contain approximately 115 million tons of waste rock on 232.9 acres of currently undisturbed BLM land. There would be no differences in the effects to NFS land between Alternative M2 and Alternative M3.

3.1.4. Reclamation (Common to All Alternatives)

TCMC has reclaimed approximately 660 acres as of June 2011. Concurrent reclamation activities during the last 30 years at the mine have been primarily removing non-native materials, recontouring, revegetation, and aesthetic measures such as boulder scattering. The primary goals

of these efforts are to provide slope stability, and to return disturbed areas to a relatively natural function (e.g., vegetation to minimize soil erosion and maximize wildlife habitat) and appearance (e.g., would not be noticed by a casual observer).

The 1979 reclamation plan (analyzed in the 1980 EIS) was revised and described in more detail in the 1999 consolidated reclamation plan, as amended (EnviroNet 1999) (analyzed in the 1999 SEIS). Further information specific to reclamation water management for the MMPO is in the water management plan (Lorax 2012a). The consolidated reclamation plan is summarized below and detailed further in Sections 2.1.1.8 and 2.1.3.6 of the FEIS.

Post-Mining Land Use Objectives

The overall goal of the reclamation plan is to reclaim the mine site to support wildlife habitats similar to those which occur adjacent to the site. Related objectives include hydrologic function, soil productivity, and aesthetics. The open pit will remain as a water storage facility.

Facility Decommissioning

Towards the end of mining, stocks of materials such as fuels, lubricants, and reagents will be reduced to those necessary to complete mining. Excess materials will be returned to the suppliers or sold for use elsewhere whenever possible. Final stocks of chemicals that cannot be returned or used elsewhere will be properly packaged and disposed of off-site in permitted waste handling facilities. Tanks, pipes, pumps, vessels, sumps, and other equipment or facilities using process chemicals will be cleaned and the residues disposed of in accordance with applicable regulatory requirements.

Buildings and structures (including power lines) not required for reclamation and maintenance of water management facilities will be dismantled and sold or demolished and the structural materials either sold or buried on-site in permitted, solid waste landfills. However, the administration building at the upper security gate will remain as a permanent site feature.

There will be one or two solid waste landfills on private land at the mine site used for disposal of concrete, wood, piping material, etc. The landfill(s) will depend on the configuration of the WRSFs at reclamation.

All remaining above-ground materials, equipment, pipelines, culverts, and facilities will be removed to ground level and either sold as scrap or disposed of in the landfill(s). Subgrade facilities, including buried pipes, cable trays, sumps, sewers, etc. will be plugged at their surface openings and decommissioned in place to minimize surface disturbance. Concrete foundations will be broken down to ground level and removed to the landfill(s) or buried in place and covered with earth to form natural-looking landforms.

Open Pit

Access to the edge of the open pit (located entirely on private land) will be restricted by berms and/or rock piles and/or bar gates at the access roads leading to the pit. Areas accessible for seeding along the top of the pit will be seeded by hand broadcasting. The pit slopes will continue to produce rock falls to the interior of the pit. The rock fall will initially be retained on

the remaining pit catch benches, but will ultimately obliterate some of the benches yielding talus slope-like features. Water (groundwater and surface run-off) will naturally accumulate in the bottom of the open pit forming a lake. During reclamation of the TSF, the tailings water removed from the impoundment area will be piped to the open pit. During and after reclamation of the WRSFs, water from these facilities will also be piped to the open pit, after being treated with lime.

Waste Rock Storage Facilities

The WRSFs will be reclaimed in a manner similar to the open pit, except for differences noted in Sections 2.1.1.8 and 2.1.3.6 of the FEIS. The reclaimed WRSFs will have three levels (benches) each that will vary in elevation (described in detail in FEIS Sections 2.1.1.8 and 2.1.3.6). The surface of the facilities (benches and slopes, except the lower bench slope) will be graded to final contours to blend with surrounding topography and to divert run-off towards surface water diversion and collection ditches at the margins of the facilities.

TSF

The design plans for the reclamation of the TSF are in the original tailings closure plan (SRK 1982). The plans were updated and are summarized in the consolidated reclamation plan (EnviroNet 1999), and the plans were updated again in 2008 (WMC 2008). However, the reclamation of the TSF is the authority of the Idaho Department of Water Resources (IDWR) and IDL, and the IDWR does not approve reclamation design plans for TSFs until the time of final reclamation (the IDWR must approve any change to the operating plan for a TSF before the change is implemented).

During the final 2 years of mining, the impoundment area will be covered by a 7-foot-thick layer of pyrite-reduced tailings solids and the tailings water pond will be relocated from the upper end of the impoundment area to the southwest corner of the impoundment. After the final grade is established for the surface of the impoundment, the water in the TSF pond will be pumped to the open pit. The exposed tailings solids will be allowed to drain and consolidate to produce a dry surface that can support heavy equipment for reclamation and minor additional surface grading. A channel for Bruno Creek will be re-established on the surface of the impoundment area and the existing Bruno Creek diversion structures (on NFS land) and pipeline will be removed. The channel is designed to allow for the average annual flow of Bruno Creek (10 cubic feet per second [cfs]), with a minimum of 1 foot of freeboard and the maximum recorded flow for Bruno Creek (42 cfs) with 0.5 foot of freeboard. The average baseflow velocity of this channel will be approximately 3 to 4 feet per second. The impoundment area will be covered (capped) with a 2 foot thick layer of inert material capable of supporting the growth of vegetation used for reclamation. The downstream face of the embankment will be benched and covered with inert, durable rock, as required by IDWR.

The final surface of the impoundment will slope toward the southwest and flow from Bruno Creek will be routed in a channel constructed across the reclaimed TSF to a spillway in the southwest corner of the impoundment. The spillway channel will be excavated through native rock on BLM and private land. Under normal conditions the water in the channel will flow unimpeded across the reclaimed surface of the TSF impoundment, i.e., the spillway will be designed to pass a maximum of 15 cfs of flow with no restrictions. Higher flows would be

temporarily impounded to control flows through the spillway. The final configuration of the embankment and impoundment area will have the capacity to store the 96-hour, probable-maximum flood from the upstream Bruno Creek watershed to a maximum stage elevation of 7,742 feet (Phase 8), conservatively assuming no outlet for surface flow from the impoundment, and leaving 10 feet of freeboard on the reclaimed embankment (WMC 2008).

The TSF seepage collection system on private and BLM lands will continue to function following reclamation, but at decreasing flow rates. The reclaimed TSF will permit water to infiltrate through the surface.

Roads

Roads or road segments will be reclaimed as soon as they are no longer required for mining, reclamation activities, or general site access. The road width on 6.7 miles of long-term, post-closure maintenance road on NFS land will be reduced by approximately 50 percent.

Revegetation Plan

Revegetation will be conducted to stabilize reclaimed surfaces with perennial vegetation communities and restored to a post-mining land use for multiple use management. Certified weed-free seed will be used. The successful revegetation will include the establishment of at least 70 percent of the ground cover found on adjacent reference areas for two full growing seasons after cessation of soil amendment or irrigation. The emphasis for the revegetation efforts in terrestrial areas will be development of vegetative cover that will mimic the vegetation in the surrounding area, stabilize ground surfaces, and establish wildlife habitat to meet the land use objectives of the overall reclamation plan.

In the 1980s, reclamation specialists from the Forest Service developed a vegetation seed mixture based on drought tolerant species. The mix has been tested on other reclamation projects within central Idaho (e.g., Blackbird Mine) with positive growth rates. The results of these efforts identified appropriate seed mixtures and soil amendments such that revegetation at the mine is now nearly always successful on the first attempt. That is, there are no distinct areas of bare soil or erosion such as rills or gullies, and wildlife regularly forage on reclaimed areas of the mine. The seed mixes consist only of native species or potentially non-invasive/sterile quick-cover crops.

After seeding has established groundcover, shrubs (sagebrush [*Artemisia* L.] and bitterbrush [*Purshia tridentate*]) and trees (primarily lodgepole pine [*Pinus contorta*]) will be hand-planted in selected areas designated for sagebrush/grasslands/woodlands habitat. An average of 60 shrubs and 60 trees per acre will be planted. If an area is not conducive to shrub or tree growth it will not be planted. More planting will be done in locations farther from natural seed sources, with the assumption that areas near shrubs and trees will have more natural regeneration.

Special riparian habitats will be established at the water management facilities that are required to operate during and after² reclamation: the sedimentation ponds below the WRSFs, the lower Bruno Creek drainage, and the seepage return dam below the TSF. The vegetation species in these habitats will be willows, cottonwoods (*Populus* spp.), alder (*Alnus* spp.), and a variety of grasses and emergent aquatic species that will either be planted or naturally established.

Post-reclamation Water Management

It is implicit in the consolidated reclamation plan (part of the approved MPO for the mine through Phase 7) that no water will be discharged that would violate any Federal or State water quality laws, i.e., the water will be treated if necessary. TCMC has developed detailed plans for long-term water management (Lorax 2012a). These include long-term capture and treatment of drainage from the WRSFs and the TSF, along with management of the final pit lake level through pumping and treatment prior to discharge through the existing permitted National Pollutant Discharge Elimination System (NPDES) discharge points.

During any short-term halts to mining, water from the mine site will be treated at the process water treatment plant (PWTP) and discharged to the pit. During any long-term halts to mining, water from the mine will be treated at the PWTP and discharged at Outfalls 002 or 005 or to the pit. The lower portion of the open pit will gradually fill with water to an elevation of 7,030 feet in an estimated 70 years for the larger Phase 8 pit. The open pit will naturally collect surface run-off and groundwater. In addition to the natural water collected, the open pit will be used as a storage facility for the management of poor quality water collected at the WRSFs. This water will be piped from the WRSFs to a lime treatment plant prior to discharge to the pit to maintain neutral, moderate water quality within the open pit lake. The initial drainage water from the TSF will also be pumped to the pit lake.

The water level in the open pit (private land) will rise to an elevation of approximately 7,030 feet where the level will be maintained through pumping as required to prevent the water from entering a historical adit (sealed) at approximately 7,040 feet. Water pumped from the pit will be treated either in a long-term water treatment facility or a modification of the existing PWTP to meet the NPDES limits for Outfall 005 (Salmon River). This treated water will be piped to Outfall 005.

The water management system includes run-off diversions, culverts, WRSF and TSF seepage collection facilities, sediment traps and run-off collection ponds, pump stations, pipelines, and associated electric power lines. These facilities will be decommissioned in phases as they are no longer needed during the reclamation program. The fate of the Buckskin and Pat Hughes sedimentation ponds will be decided based on water quality monitoring/effectiveness of the groundwater cutoff walls.

Industrial water supply facilities including the Salmon River intake and piping system, and the Cherry Creek pump stations will be retained for use in long-term water management. Surface

² The facilities are described in the consolidated reclamation plan as being removed after Phase 7, but would be necessary as part of the water management plan for either Phase 7 or Phase 8.

pipelines that are no longer required will be removed, and buried pipelines will be closed and left in place.

Permanent diversion ditches will be fitted to the margins of the WRSFs to channel run-off around the WRSFs. The WRSFs will be recontoured to drain to their margins and to avoid ponding on their surfaces.

Water draining from the Pat Hughes WRSF will be collected in a pipe and transferred to the Cherry Creek booster pump station via the Thompson Creek pipeline. From there it will be pumped uphill to a lime treatment plant adjacent to the open pit. Treated water from the plant will be discharged to the open pit lake. To ensure maximum collection of Pat Hughes facility seepage water, three groundwater cutoff walls (one as part of Phase 7), keyed into bedrock, will be constructed to limit groundwater discharge along Pat Hughes Creek and protect water quality in Thompson Creek.

Water draining from the Buckskin WRSF will be handled in a similar manner to the Pat Hughes WRSF, with the exception that water from the Buckskin sedimentation pond may be discharged to Thompson Creek through NPDES Outfall 001 under certain conditions as described in the NPDES permit. This practice will continue long term in compliance with all terms and conditions of the NPDES permit. In the event that the Buckskin WRSF drainage water quality degrades to a level where seasonal discharge to Thompson Creek is not feasible, all drainage would be collected and routed through the Thompson Creek pipeline similar to the Pat Hughes WRSF. To protect groundwater quality downgradient from the Buckskin WRSF, one groundwater cutoff wall, keyed into bedrock, will be installed within the artesian groundwater zone at the base of the facility.

Post-reclamation Environmental Monitoring

Post-reclamation monitoring will continue for water quality, geotechnical stability, revegetation success, and achievement of reclamation goals and objectives. The initial plans call for three monitoring periods – initial, interim, and post-reclamation – with the duration of each period being 5 years (Table 3.1-2). However, adaptive management will be utilized to adjust these periods based upon the attainment of post-reclamation land use objectives (FEIS Section 2.1.1.9).

Table 3.1-2. Post-reclamation monitoring, Alternative M2.

Monitoring¹	Years
Sediment sampling	5+
Aquatic biota and habitat	16+
Surface water quality	16+
Groundwater quality	16+
Receiving stream	16+
TSF water	15+
TSF geotechnical	15+
TSF revegetation	10+
Waste rock geotechnical	10+
Waste rock revegetation	10+
Other revegetation	10+

¹ beyond that of Alternative M1

3.1.5. Environmentally Preferable Alternative

Alternative M1, the no action alternative, is the environmentally preferable alternative because it would not involve environmental effects beyond which have already been permitted under the original MPO and minor modifications through Phase 7. However, the Forest Service does not have the discretion to select the no action alternative (i.e, reject a reasonable mine plan of operations) only to apply terms and conditions to protect surface resources.

3.1.6. Comparison of Alternatives

Key issues were identified through public and internal scoping (Section 5.1). The key environmental effects of the MMPO alternatives (primarily negligible to moderate) are compared in the FEIS in Section 2.1.5.

3.2. Alternatives Considered but Eliminated From Further Analysis

In addition to Alternatives M2, M3, and the no action alternative, 10 other alternatives identified through internal and external scoping were considered in the FEIS. These alternatives and the reasons why they were eliminated from further consideration are discussed in Section 2.1.7 of the FEIS. Generally, the alternatives were found to be technically infeasible, economically unreasonable, and would not meet the purpose and need of the action, or the same issues raised were better addressed with one of the action alternatives carried forward for in-depth analysis in the EIS.

PART 4. ENVIRONMENTAL CONTROLS, MONITORING, AND MITIGATION

Operational (i.e., non-reclamation) environmental controls and monitoring activities at the mine include the following:

- Fugitive dust suppression and point source emission controls;
- Erosion, run-off, and sedimentation controls according to best management practices (BMPs) with discharge of collected water through permitted NPDES outfalls;
- Prevention and control of petroleum and chemical spills;
- Waste rock monitoring, classification, and management;
- Selective management of pyrite in the tailings and potentially acid-generating (Type 2) waste rock;
- Monitoring and reporting for multiple environmental media according to approved plans;
- Compliance with a road maintenance plan, transportation plan, and surface water pollution prevention plan to protect surface water quality; and
- Stability monitoring of the TSF, pit highwalls, and WRSFs.

TCMC follows environmental compliance plans for each of these areas of environmental concern as part of the current MPO, and will continue to do so under the MMPO. The TCMC consolidated environmental monitoring program (TCMC 2008) is a part of the MPO that describes the environmental monitoring program related to biological conditions, air emissions, NPDES permit compliance, structural stability and dam safety, mine waste monitoring, and water quality monitoring. Per this program, TCMC has been providing quarterly and annual summary reports for regulatory agency review since 2007 and was reporting similar monitoring data under an earlier program prior to 2007. These compliance plans and additional environmental protection measures and monitoring are summarized in Section 2.1.1.7 of the FEIS.

In addition to the mitigation and monitoring listed above and described below, adaptive management (FEIS Section 2.1.1.9) will be utilized in conjunction with monitoring to ensure reclamation goals are met.

4.1. Geologic Resources and Geotechnical Issues

If unanticipated paleontological resources are encountered during mining, TCMC will immediately notify the Forest Service or the BLM authorized officer (depending on location of the resources), and operations will be halted in the vicinity of the discovery until inspected by the Forest Service, the BLM, or an agency-approved paleontologist, and a mitigation plan developed, if necessary. Paleontological resources will be avoided until the Forest Service, the BLM, or an agency-approved paleontologist conducts investigations as needed to determine the significance of the fossils. At the discretion of the Forest Service or the BLM, these fossils will be avoided for a length of time that is reasonable (i.e., at least 10 days after notification to the authorized officer of such discovery) to allow agency personnel to conduct the investigations. TCMC will be responsible for the cost of these investigations, evaluations, and mitigations.

4.2. Vegetation, Forest Resources, and Invasive and Non-native Plants

The trees planted for reclamation could include whitebark pine seedlings in all disturbed areas within 100 vertical feet of ridgetops with an elevation of 7,300 feet or more, e.g., the head of the Buckskin Creek drainage.

4.3. Water Resources

The Consolidated Environmental Monitoring Program 2007 to 2012 for the mine contains a water quality monitoring plan and adaptive management plan (TCMC 2008). The program will be modified according to the adaptive groundwater management plan (Lorax 2012b) to better identify potential water quality problems due to either inaccurate predictions or to operations (e.g., cutoff walls) not performing as intended. For example, Lorax (2012b) notes that additional groundwater monitoring in the colluvium and metasedimentary bedrock just downgradient (within 30 feet) of the cutoff wall should provide a better evaluation of the cutoff wall performance and hydraulic gradients between the cutoff wall and the drainage outlet. In addition, water level monitoring just upgradient of the cutoff walls using automated piezometers (for safety purposes at the toes of the WRSFs) will allow the determination of the hydraulic gradient across the cutoff wells, which will also provide a better evaluation of the cutoff wall performance. Furthermore, the Phase 8 pit wall could be mapped for major faults/fractures that could convey pit lake water to the groundwater near the pit. Such data could be integrated into a subsequent groundwater monitoring system to evaluate the potential effects of the pit lake on groundwater.

4.4. Wetlands, Floodplains, and Riparian Areas

The wetland and stream mitigation plan (HDR 2014) will mitigate the effects of the MMPO alternatives on WUS. The objective of the wetland and stream mitigation is to protect streambanks along S. Creek from damage caused by livestock and to reestablish a 5.64-acre wetland along S. Creek. Protecting the streambanks will be accomplished by fencing out livestock and the repair or restoration of 100 feet of bank using bio-engineering as described in the wetland and stream mitigation plan. Re-establishing the wetland will involve earthwork and plantings. Contractors will be required to implement a stormwater pollution prevention plan during the construction and vegetation establishment phase of the wetland and stream channel rehabilitation work.

4.5. Cultural and Paleontological Resources

A potential adverse effect to the National Register of Historic Places (NRHP)-eligible Cinnabar/Bruno Creek Mine/lithic scatter (CH-285; 10CR758) could require the development and approval of a cultural resource mitigation plan and further consultation with the State Historic Preservation Office (SHPO), Advisory Council on Historic Preservation, and Tribes. This will require a ground survey of the site to determine which, if any, site components will be affected by the MMPO. If the site will be adversely affected, the Forest Service will enter into a formal agreement with the SHPO and Advisory Council on Historic Preservation to mitigate the adverse effect (CH-15-890).

The measures described for the unanticipated discovery of paleontological resources (above) will be implemented for the unanticipated discovery of cultural resources.

PART 5. PUBLIC INVOLVEMENT

5.1. Scoping

The notice of intent (NOI) was published on August 3, 2010, in the *Federal Register*, Volume 75, No. 148, Page 45652. The publication of the NOI initiated the formal 30-day scoping period for the EIS. A BLM website for the project was launched concurrently with publication of the NOI, and has remained active throughout the project (http://www.blm.gov/id/st/en/prog/nepa_register/TCM-exlx_EIS.html). A legal notice and press release for the scoping period was published by the BLM. The agencies prepared a scoping letter that summarized the proposed MMPO and related Federal actions. The scoping letter, a description of the MMPO and land exchange proposals, maps, and a blank comment form were mailed to 617 potentially interested parties on August 3, 2010. Two public scoping meetings in open house format were held on August 23, 2010 in Boise and on August 24, 2010 in Challis. By the close of the 30-day scoping period and a grace period, 218 public responses had been received. A formal internal scoping meeting was held on November 24, 2009 in Challis to solicit comments from Federal and State agencies with jurisdiction or interest in the project. Informal internal scoping among employees of the BLM, Forest Service, USACE, EPA, IDEQ, and IDL has continued throughout the project.

5.2. Distribution of the Draft Environmental Impact Statement

A 90-day public comment period was initiated for the draft environmental impact statement (DEIS) by publication of the EPA notice of availability for the DEIS in the *Federal Register* on March 21, 2014 (75 FR 06113). BLM published legal notices in local newspapers, provided news organizations with a news release, and updated the BLM project website announcing the availability of the DEIS. The DEIS was provided to all parties on the project mailing list, and made available via the project website. Public meetings were held in Challis and Boise to obtain comments on the DEIS and to answer questions that the public had regarding the project or the EIS process. By the close of the 90-day scoping period, 684 public responses had been received. Responses received on the DEIS were reviewed and evaluated by the agencies to determine if information provided in the comments required a formal response or contained new data that identified deficiencies in the EIS.

PART 6. LEGALLY-REQUIRED FINDINGS

The following is a general description of the principle authorities under which the FEIS and this draft ROD has been prepared, and is not intended as a comprehensive statement of the rights and obligations of the Federal government under any such authority or permit issued pursuant thereto. A comprehensive list of permits necessary to implement the selected alternative is provided in Section 1.10 of the FEIS.

6.1. The National Environmental Policy Act of 1969, as amended (42 USC 4321 *et seq.*)

The National Environmental Policy Act (NEPA) is the basic national charter for protection of the environment and governs the preparation of an EIS. The FEIS considers the potential environmental effects and alternatives to the proposed Federal action with appropriate analyses using the best available science. Public involvement and agency cooperation in the NEPA

process was implemented early to ensure that agency planning and decisions reflected environmental values.

6.2. The Organic Administration Act of 1897, as amended (16 USC 471 *et seq.*); Multiple-Use Sustained-Yield Act of 1960, as amended (16 USC 528-531); Forest and Rangeland Renewable Resources Planning Act of 1974, as amended (16 USC 1601-1610); and National Forest Management Act of 1976, as amended (16 USC 1600 *et seq.*)

These laws govern the administration of NFS lands including forest plans (36 CFR 219) and locatable mining activities (36 CFR 228A). The project would involve two Management Areas (MAs) in the Challis National Forest LRMP (USFS 1987): MA 8 (Thompson Creek) and MA 9 (S. Creek). Management prescriptions for MA 8 emphasize enhancement of wildlife habitat, and provide for minerals activities and dispersed recreation opportunities. The prescriptions for MA 9 also recognize the high potential for locatable mineral occurrence and probable future mineral development. The LRMP identifies the mine as a current use within each of these MAs; therefore, Alternative M2 will be in conformance with the LRMP.

The LRMP was amended by the “Interim strategies for managing anadromous fish-producing watersheds in eastern Oregon and Washington, Idaho, and portions of California” commonly known as PACFISH (PACFISH 1995). The MMPO complies with applicable PACFISH standards and meets PACFISH management objectives and desired future conditions contained in applicable ecosystem-scale watershed assessments (Stantec 2015).

6.3. Federal Mining Laws (e.g., 30 USC 21 *et seq.*, 30 USC 601 *et seq.*)

These laws govern the right to mine locatable minerals, including molybdenum, on Federal lands. Implementation of Alternative M2 will be in accordance with the Federal Mining Laws.

6.4. The Endangered Species Act of 1973, as amended (16 USC 1531-1544)

The Endangered Species Act (ESA) provides for the conservation of threatened and endangered species and their habitats. Federal agencies are required by the ESA (Section 7) to consult with the US Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) to ensure that any action authorized, funded, or carried out by a Federal agency will not jeopardize the continued existence of threatened and endangered species or result in the destruction or adverse modification of designated critical habitat.

A biological assessment (BA) was prepared by the BLM for the USFWS and NMFS to determine if endangered or threatened species, and any designated critical habitat for these species, would be affected by the MMPO. The BA determined that the MMPO is likely to adversely affect four fish species: bull trout (*Salvelinus confluentus*), Chinook salmon (*Oncorhynchus tshawytscha*), sockeye salmon (*Oncorhynchus nerka*), and steelhead (*Oncorhynchus mykiss*), as well as designated critical habitat for these species. The BA determined that the MMPO is not likely to adversely affect western yellow-billed cuckoo (*Coccyzus americanus occidentalis*) or Canada lynx (*Lynx canadensis*). There will be no effect to proposed designated critical habitat for the western yellow-billed cuckoo or to designated critical habitat for Canada lynx. Because the BA determined that approval of the MMPO is likely to adversely affect the four fish species and designated critical habitat for these species,

formal consultation and a biological opinion is required from the USFWS and NMFS. This consultation is ongoing at the time of this draft ROD.

6.5. The Migratory Bird Treaty Act of 1918, as amended (16 USC 703-712) and the Bald and Golden Eagle Protection Act of 1940, as amended (16 USC 668-668d)

The Migratory Bird Treaty Act (MBTA) is part of the establishment of an international framework for the protection and conservation of migratory birds. The MBTA prohibits, except as permitted by regulation, the take of certain migratory birds. The Bald and Golden Eagle Protection Act (BGEPA) provides for the protection of the bald eagle and the golden eagle by prohibiting, except under certain specified conditions, the taking, possession, and commerce of such birds, alive or dead. Activities that would disturb bald or golden eagles are prohibited under the Act.

In order to comply with the MBTA and the BGEPA, protective measures will be implemented during all habitat-clearing activities, particularly tree removal, power line relocation, and pipeline construction. These protective measures are detailed in Section 2.1.3.5 of the FEIS.

6.6. The Clean Water Act of 1972, as amended (33 USC 1251 *et seq.*)

The primary objective of the Clean Water Act (CWA) is to restore and maintain the chemical, physical, and biological integrity of the Nation's surface waters by regulating the discharge of pollutants into these waters, and achieving water quality levels that are safe for fish, shellfish, wildlife, and recreation in and on water. Section 402 of the CWA provides for the NPDES, which is administered in Idaho by the EPA. No amendment or modification of TCMC's NPDES permit will be required to implement the MMPO. In conjunction with adaptive management (FEIS Section 2.1.1.9), all project activities will meet the requirements of the CWA. TCMC has submitted a Section 404 permit application to discharge fill to WUS, and the USACE will issue a decision on the application, in order to be in compliance with Section 404 of the CWA. Further, the IDEQ has conducted an antidegradation analysis and issued a CWA Section 401 certification for the MMPO (IDEQ 2015).

6.7. The Clean Air Act of 1970, as amended (42 USC 7401 *et seq.*)

The key purpose of the Clean Air Act (CAA), is "...to protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population." No amendment or modification of TCMC's CAA permit will be required for TCMC to implement the MMPO. All project activities will meet the requirements of the CAA.

6.8. Secretarial Order No. 3226 Amendment No. 1

Secretarial Order No. 3226 Amendment No. 1 states that each bureau and office of the US Department of the Interior shall "consider and analyze potential climate change impacts when undertaking long-range planning exercises, or when making major decisions affecting [Department of the Interior] resources." Sections 3.10.3 and 4.10.3 of the FEIS provide a summary and analysis of the potential climate change effects of the project on the climate and also climate change on the project (both negligible) using the best available science related to climate change.

6.9. The Federal Noxious Weed Act of 1974, as amended (7 USC 2801-2814)

The Federal Noxious Weed Act provides for the control and management of non-indigenous (non-native) weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health. The current BLM Challis Field Office integrated weed control program was approved in 2009 (BLM 2009). This program is consistent with the approved alternative of the BLM programmatic EIS for vegetation treatments using herbicides (BLM 2007). The SCNF manages weeds consistent with the Challis National Forest LRMP (USFS 1987) and a BA and biological opinions specific to noxious weed management (USFWS 2004; NMFS 2007). The SCNF is in the process of revising its weeds management plan (USFS 2015a) and TCMC will be required to comply with all aspects of the applicable program and plans in any approved MMPO.

6.10. Idaho Roadless Rule of 2008 (36 CFR 294 Subpart C)

The Idaho Roadless Rule established management direction for designated roadless areas in Idaho in order to protect their important characteristics. The final configuration of the reclaimed TSF could extend less than 1 acre into the S. Creek Idaho Roadless Area. Approval of the MMPO will be consistent with the Idaho Roadless Rule because the rule does not “affect mining activities conducted pursuant to the General Mining Law of 1872” (§294.25(b)). However, the Idaho Roadless Commission was notified and an analysis of project impacts to wilderness attributes and roadless characteristics (negligible to none; USFS 2015b) was completed.

6.11. The Archaeological Resource Protection Act of 1979 (16 USC 470aa-mm); National Historic Preservation Act of 1966, as amended (16 USC 470 *et seq.*)

The purpose of the Archaeological Resource Protection Act is to secure the protection of archaeological resources and sites on public lands and Indian lands, and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community, and private individuals having collections of archaeological resources. The National Historic Preservation Act requires Federal agencies to consult with State and local groups on Federal undertakings before nonrenewable historic properties, such as archaeological sites and cultural resources, are damaged or destroyed. The potential effects to a NRHP-eligible site may require the development and approval of a cultural resource mitigation plan and further consultation with the SHPO, Advisory Council on Historic Preservation, and the Tribes (Section 4.5).

6.12. Paleontological Resources Preservation Act of 2009 (123 Stat. 1172; 16 USC 470aaa)

The Paleontological Resources Preservation Act of 2009 established authorities for permitting, collecting, and protection of the resource and provisions for criminal and civil penalties for violations of the law. The MMPO will comply with the Paleontological Resources Preservation Act (Section 4.1).

6.13. Federal Agency Responsibilities to Federally-Recognized Tribes

Native American Tribes are afforded specific rights under various Federal laws, and Federal agencies are required to consult with Tribes on such matters such as the project. The NEPA regulations require that the lead agency for preparing an EIS shall invite the participation of any affected Indian Tribe as part of the scoping process (40 CFR 1501.7). The lead agency for this

project, the BLM, has conducted ongoing consultation with the Nez Perce Tribe and the Shoshone-Bannock Tribes. The consultation to date is summarized in Section 6.3 of the FEIS. Additional consultation may be required (Section 6.11).

6.14. Idaho Water Quality Standards (IDAPA 58.01.02) and Groundwater Quality Rule (IDAPA 58.01.11)

The IDEQ is responsible for administering the Idaho WQSs, which define the designated beneficial uses of a surface water segment and the water quality criteria necessary to support those uses, and the groundwater quality rule which states that groundwater must be managed in a manner which maintains or improves existing groundwater quality through the use of BMPs and best practical methods to the maximum extent practical. The project is expected to meet the State WQSs for surface water and groundwater (Section 6.6) through the water management plan (Lorax 2012a), adaptive management strategies (FEIS Section 2.1.1.9), and the adaptive groundwater management plan (Lorax 2012b).

6.15. Environmental Justice

On February 11, 1994 President Clinton signed Executive Order 12898 directing each Federal agency to make environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high, and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The MMPO will not disproportionately affect minority or low-income populations.

PART 7. PRE-DECISIONAL ADMINISTRATIVE REVIEW

The Forest Service has issued this draft ROD subject to administrative review (objection) pursuant to 36 CFR 218 subparts A and B (pre-decisional administrative review). Objections will only be accepted from those who have previously submitted specific written comments regarding the MMPO during designated opportunities for public comment in accordance with §218.5(a). The first designated opportunity was the public scoping period. The second opportunity was the 90-day public comment period for the DEIS. No further opportunities to obtain standing to object are anticipated for the project. Issues raised in objections must be based on previously submitted, timely, specific, written comments regarding the project unless based on new information arising after the designated comment opportunities. A written objection must be submitted to the objection reviewing officer within 45 calendar days following the publication date of the legal notice of this opportunity to object in *The Challis Messenger*, Challis, Idaho. The objection must contain the minimum requirements specified in §218.8(d) and incorporation of documents by reference is permitted only as provided in §218.8(b). The publication date in the newspaper of record (*The Challis Messenger*) is the exclusive means for calculating the time to file an objection. If an objection is received on this project, a 45-day objection review period will begin.

Written objections must be submitted to: Nora Rasure, Objection Reviewing Officer, Federal Building, 324 25th Street, Ogden, Utah 84401 (postal) or (801) 625-5277 (facsimile). Electronic comments must be submitted in a format such as an email message, plain text (.txt), rich text format (.rtf), and Word (.doc or .docx) to objections-intermt-n-regional-office@fs.fed.us. Please

type “Thompson Creek Mine FEIS” in the subject line for email messages and facsimile and include your mailing address and phone number.

At the end of the objection reviewing period the reviewing officer may consolidate objections and issue one response or may decide to issue a written response to each objection. The written response will be the final decision by the US Department of Agriculture on the objections. Once the reviewing officer has issued the response to the objections and the responsible official has followed any instructions contained in the written response, or if no objections are received, the responsible official may sign the final ROD and implement the project without further legal notice of the decision. Interested and affected parties will be informed of the decision. The signing of the final ROD in accordance with 40 CFR 1506.10 may occur on, but not before, the 5th business day following the end of the objection filing period.

REFERENCES

- BLM (2007) Programmatic Environmental Impact Statement Vegetation Treatments Using Herbicide on Bureau of Land Management Lands in 17 Western States. Volume 1. US Department of the Interior Bureau of Land Management, BLM/WO/GI-07/009+6711, 387 p. Available at http://www.blm.gov/wo/st/en/prog/more/veg_eis.html [Accessed 18 September 2013].
- BLM (2009) Finding of no significant impact and decision record for the Challis-Salmon integrated weed control program environmental assessment. Challis and Salmon, Idaho: US Department of the Interior, Bureau of Land Management, Idaho Falls District, Challis and Salmon field offices. Unpublished document, 26 March 2009, 6 p.
- BLM (2015) Final Environmental Impact Statement and Proposed Resource Management Plan Amendment for the Thompson Creek Mine Expansion and Public Land Disposal, Custer and Bannock Counties, Idaho, Volumes I and II, 2200/3809/IDI-33145/IDI-35728 (IDI030), 1,329 p.. Available at http://www.blm.gov/id/st/en/prog/nepa_register/TCM-exlx_EIS.html.
- Cyprus Mines Corporation (1979) Notice of Intent and Plan of Operations. Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case Files IDI-33145 and IDI-30377 (several hundred pages of documents provided in compliance with the Bureau of Land Management surface management regulations, 43 CFR 3809).
- EnviroNet (1999) Consolidated reclamation plan. EnviroNet Inc., unpublished report prepared for Thompson Creek Mining Company. August 1999, 52 p.
- HDR (2014) Thompson Creek Mine wetland and stream mitigation plan: Squaw Creek. Boise, Idaho: HDR Engineering, Inc. Unpublished report prepared for Thompson Creek Mining Company, January 2014, Appendix A - Map 2 revised 17 November 2014, 28 p. and Appendices A-B (46 p. total). Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI 33145.

- IDEQ (2015) Thompson Creek Mine expansion final Section 401 water quality certification. Boise, Idaho: Idaho Department of Environmental Quality, NWW-2008-00579, 27 January 2015, 10 p.
- Lorax (2012a) Thompson Creek Mine water management plan. Vancouver, British Columbia, Canada: Lorax Environmental Service, Ltd., prepared for Thompson Creek Mining Company, July 2012, 249 p. Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.
- Lorax (2012b) Thompson Creek Mine adaptive groundwater management plan. Vancouver, British Columbia, Canada: Lorax Environmental Service, Ltd., prepared for Thompson Creek Mining Company, Project No. 915-3, 31 August 2012, 32 p. Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.
- NMFS (2007) Concurrence and biological and conference opinions for the noxious weed management program on lands administered by the Salmon-Challis National Forest, Idaho. US Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service, March 2007.
- PACFISH (1995) Interim strategies for managing anadromous fish-producing watersheds in eastern Oregon and Washington, Idaho, and portions of California. US Department of Agriculture, Forest Service and US Department of the Interior, Bureau of Land Management, Environmental Assessment, 24 February 1995, 72 p. and separately paginated glossary and appendices A-L. Available at http://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsbdev3_033465.pdf [Accessed 14 March 2013].
- SRK (1982) Conceptual reclamation plan and cost estimate, Thompson Creek project, tailings impoundment, Denver, Colorado: Steffen Robertson and Kirsten, Inc. Unpublished report prepared for Cyprus Mines Corporation, December 1982, 27 p. and unnumbered tables and figures. Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.
- Stantec (2015) Final Thompson Creek Mine MMPO analysis for compliance with PACFISH, Sandy, Utah: JBR now Stantec Consulting, Ltd, prepared for US Department of Agriculture, US Forest Service, Salmon-Challis National Forest, 27 January 2015, 16 p.
- TCMC (2008) Consolidated environmental monitoring program 2007-2012. Clayton, Idaho: Thompson Creek Mining Company. Unpublished report prepared for the Thompson Creek Mine Interagency Task Force, 29 August 2008, 56 p. Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.
- USFS (1980) Final environmental impact statement, Thompson Creek molybdenum project, Custer County, Idaho, Cyprus Mines Corporation. Challis, Idaho: US Department of

- Agriculture, US Forest Service, Challis National Forest, 31 October 1980, 363 p. Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.
- USFS (1987) Challis National Forest Land and Resource Management Plan. US Department of Agriculture, US Forest Service, 310 p. Available at <http://www.fs.fed.us/r4/sc/projects/> [Accessed 19 January 2010].
- USFS (1999a) Thompson Creek mine final supplemental environmental impact statement. Ogden, Utah: US Department of Agriculture, US Forest Service, Salmon-Challis National Forest, January 1999, separately numbered front matter, Chapters 1-7, and back matter including Appendices A-F (Volume 1) and Technical Appendix (Volume 2) (475 p. total). Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.
- USFS (1999b) Record of decision, Thompson Creek mine final supplemental environmental impact statement. Ogden, Utah: US Department of Agriculture, US Forest Service, Salmon-Challis National Forest and Boise, Idaho: US Department of the Interior, Bureau of Land Management, Idaho State Office, 04 March 1999, 17 p. Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.
- USFS (2000) Thompson Creek Mine Supplemental Plan of Operations Record of Decision. US Department of Agriculture, US Forest Service, Salmon-Challis National Forest, 11 p.
- USFS (2015a) Salmon-Challis National Forest Invasive Plant Treatment Draft Environmental Impact Statement: US Department of Agriculture, US Forest Service, Salmon-Challis National Forest, February 2015, 652 pp.
- USFS (2015b) Thompson Creek MMPO for mine expansion, Worksheet 1 – Wilderness Qualities or Attributes, Evaluating the Effects of Project Activities on Wilderness Attributes, Squaw Creek roadless area: US Department of Agriculture, US Forest Service, Salmon-Challis National Forest, 26 January 2015, 6 p.
- USFWS (2004) Concurrence and biological and conference opinions for the noxious weed management program on lands administered by the Salmon-Challis National Forest, Idaho. Portland, Oregon: US Department of the Interior, Fish and Wildlife Service, Region 1, August 2004.
- VTN (1975) Environmental impact assessment: proposed molybdenum facility, Custer County, Idaho. Denver, Colorado: VTN Colorado, Inc. Unpublished document prepared for Tuscarora Mining Corporation, Los Angeles, California, March 1975, 528 p. Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.

WMC (2008) Thompson Creek project, tailings impoundment conceptual reclamation plan and cost estimate – Phase VIII. Denver, Colorado: Water Management Consultants, Inc. (purchased by Schlumberger Ltd. in October 2007 and merged into Schlumberger Water Services). Unpublished report prepared for Thompson Creek Mining Company, Clayton, Idaho, March 2008, Report No. 2734, 14 p. and 3 drawings (3 p.), channel design notes (5 p.), and Appendix A (2 p). Copy in Challis, Idaho: US Department of the Interior, Bureau of Land Management, Challis Field Office, Case File IDI-33145.

This page intentionally left blank.

